DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: **International Paper Company, Treated Wood Products (TWP) Area**
Facility Address: **10 International Way, Longview, Washington**
Facility EPA ID #: **WAD 010745917**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

__X__ If yes - check here and continue with #2 below.

_____ If no - re-evaluate existing data, or

_____ if data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future. __

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective

"levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

__**X**__ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

_____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): The former International Paper facility was located on the north side of the Columbia River, approximately 66 miles upriver from the Pacific Ocean. The former facility is located less than two miles downstream of the confluence of the Columbia and Cowlitz rivers. The former facility lies within the 100-year floodplain but is protected by control levees. A tidal study performed in 1995 and 1996 indicated that groundwater responds to tidal stages of the Columbia River. While net direction of shallow groundwater flow is towards the north-northeast away from the Columbia River, the hydraulic gradient varies with the tidal stage.

International Paper operated the former treated wood product (TWP) area from 1956 to 1983. Process water from the wood treatment activities was routed to two recovery ponds (Ponds 1and 2). The TWP area, the site of the former wood treatment facility at the former southwestern corner of the International Paper facility, encompassed the retort building, associated structures (e.g., tanks, sheds, water treatment facilities, and the locations of former Ponds 1 and 2. Use of the recovery ponds was discontinued in 1983. Soil from the recovery ponds was excavated and disposed of in a permitted treatment, storage, and disposal facility in 1985. The former recovery ponds and adjacent areas were backfilled with clean soil and capped with an engineered cover in 1989.

Soil sampling and groundwater monitoring detected dissolved and/or free phase wood-treating constituent above MTCA cleanup levels. The constituents of concern (COCs) in soil and groundwater include pentachlorophenol, polynuclear aromatic hydrocarbons (PAHs), and total petroleum hydrocarbons (TPH). In a consent decree filed August 18, 1997, all contiguous areas associated with the TWP area, including several SWMUs, were determined to constitute one dangerous waste management unit. As part of a cleanup action, a low permeability soil-bentonite barrier wall was constructed around the TWP area in 1997. A low-permeability engineered cover was placed over the containment area to minimize surface water infiltration and to minimize potential contact with impacted soil in 1998. A bioventing/biosparging system and LNAPL recovery system were installed in the containment area.

Contaminated soils were excavated during the construction of the subsurface barrier wall. Based on water level measurements taken inside and outside of the barrier wall, contamination in monitoring wells outside the barrier wall is probably pre-existing contamination and not the result of failure of the barrier wall.

Imposition of a deed restriction for the TWP area has been delayed until the nature and extent of contamination outside of the containment system is determined. Activities that will be prohibited under the deed restriction include subsurface intrusion such as drilling, excavation, and grading activities and construction of structures that require subsurface foundations.

Reference: *Cleanup Action Plan, Former Treated Wood Products Area, International Paper Facility, Longview, Washington*; July 1997
First Annual Groundwater Performance and Compliance Monitoring Plan Report, Former Treated Wood Products Area, International Paper Facility, Longview, Washington; May 2000

Footnotes:

[1]"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or

dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

__X___ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): In a consent decree filed August 18, 1997, all contiguous areas associated with the TWP area, including several SWMUs, were determined to constitute one dangerous waste management unit. As part of a cleanup action, a low permeability soil-bentonite barrier wall was constructed around the TWP area in 1997. A low-permeability engineered cover was placed over the containment area to minimize surface water infiltration and to minimize potential contact with impacted soil in 1998. A bioventing/biosparging system and LNAPL recovery system were installed in the containment area.

Contaminated soils were excavated during the construction of the subsurface barrier wall. Based on water level measurements taken inside and outside of the barrier wall, contamination in monitoring wells outside the barrier wall is probably pre-existing contamination and not the result of failure of the barrier wall.

Imposition of a deed restriction for the TWP area has been delayed until the nature and extent of contamination outside of the containment system is determined. Activities that will be prohibited under the deed restriction include subsurface intrusion such as drilling, excavation, and grading activities and construction of structures that require subsurface foundations.

Reference: *Cleanup Action Plan, Former Treated Wood Products Area, International Paper Facility, Longview, Washington*; July 1997

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[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

__X__ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): The former International Paper facility was located on the north side of the Columbia River, approximately 66 miles upriver from the Pacific Ocean. The former facility is located less than two miles downstream of the confluence of the Columbia and Cowlitz rivers. The former facility lies within the 100-year floodplain but is protected by control levees. A tidal study performed in 1995 and 1996 indicated that groundwater responds to tidal stages of the Columbia River. While net direction of shallow groundwater flow is towards the north-northeast away from the Columbia River, the hydraulic gradient varies with the tidal stage.

Reference: *Cleanup Action Plan, Former Treated Wood Products Area, International Paper Facility, Longview, Washington*; July 1997

First Annual Groundwater Performance and Compliance Monitoring Plan Report, Former Treated Wood Products Area, International Paper Facility, Longview, Washington; May 2000

5. Is the **discharge** of “contaminated” groundwater into surface water likely to be **“insignificant”** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater “level,” and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

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_____ If yes - skip to #7 (and enter “YE” status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of “contaminated” groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater “levels,” the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter “IN” status code in #8.

Rationale and Reference(s):____
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[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):_____

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[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

__X__ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): As part of the consent decree filed August 17, 1997, International Paper will continue to monitor the performance of the barrier wall and biotreatment system of the cleanup action according to the Performance and Compliance Monitoring Plan (PCMP).

References: *Performance and Compliance Monitoring Plan, Former Treated Wood Products Area, International Paper Facility, Longview, Washington*; July 1997

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

___X_ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the International Paper facility – Treated Wood Products (TWP) area, EPA ID # WAD 010745917, located at 10 International Way, Longview, Washington. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

Completed by _____ Date _____
Kaia Petersen
Hydrogeologist

Supervisor _____ Date _____
K Seiler
Supervisor, Hazardous Waste and Toxics Reduction Section
Washington State Department of Ecology, Southwest Region

Locations where References may be found:

Central files at the Department of Ecology's Southwest Regional Office, 300 Desmond Drive, Lacey, Washington

Contact telephone and e-mail numbers

Kaia Petersen
(360) 407-6359
kpet461@ecy.wa.gov